REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1, 2 and 4-13 are pending in the application of which claims 10-13 have been withdrawn as directed to non-elected subject matter.

The claims have been amended in order to more particularly point out and distinctly claim that which applicants regard as their invention. More specifically, claim 1 has been modified for purposes of clarity.

Claim 3 is objected to as being an improper dependent claim on page 2 of the Official Action. This claim has been deleted in order to progress examination.

The sole rejection raised in the outstanding Official Action is directed to claims 1-9, the examiner arguing that these claims are "obvious" and therefore unpatentable based upon the disclosures of U.S. patent 4,260,821 to Benjamin et al in view of EP 0141062 (EP '062). Applicants disagree with this conclusion as explained in more detail in the comments that follow.

The present invention is directed to a process for improving the production of (meth)acrylic acid by reducing the instance of unwanted polymerization during a separation/distillation step. Prior efforts in this area in general are discussed in the first several pages of applicants' specification. Applicants note that in order to effectively use oxygen in the distillation column to prevent polymerization one way is to operate the distillation column under reduced pressure in order to reduce the treatment temperature and thereby prevent unwanted polymerization. Because of this reduced temperature/reduced pressure environment it is difficult to increase the partial pressure of oxygen within the distillation column.

There is also present the difficulty of imbalance of oxygen concentration within the column itself. As oxygen is continuously consumed in the process there is a tendency with prior procedures, in which oxygen is introduced at the bottom of the column, to maintain a high oxygen concentration at the bottom of the column; this concentration is significantly decreased at the top of the column. Thus operating a distillation column under reduced pressure with the oxygen partial pressure itself low, takes a long time until the oxygen and the liquid within the distillation column reach equilibrium. This causes an imbalance in the oxygen concentration throughout the column and it is not possible to attain the desired polymerization inhibiting effect, particularly when oxygen is introduced into the distillation column from only the bottom.

An important contribution of the present invention is to adjust the dissolved oxygen concentration in the (meth)acrylic acid solution to be not less than 12 ppm by weight before it is fed to the distillation column, not after it is fed to the distillation column.

It is counsel's understanding the examiner accepts that neither Benjamin nor EP 1041062 discloses or suggests the above important contribution of the present invention.

Attention is invited to pages 7-9 of the specification. In the conventional technique, in order to prevent polymerization of (meth)acrylic acid, oxygen is fed into a liquid while it is present within the distillation column, or an oxygen-enriched liquid is freshly produced by condensing a gas within the distillation column. Usually, to attain this oxygen is fed (bubbled) from the bottom of the distillation column. This is confirmed in the primary reference -- *see* Benjamin, column 8, lines 15-21, where it is described that an O_2-N_2 mixed gas was fed into the tower reboiler (of distillation column), a procedure illustrating conventional practice in the prior art.

However, in this conventional method, the oxygen partial pressure itself is low, and it takes a long time until the oxygen and the liquid within the distillation column to reach an equilibrium concentration, thereby failing to immediately provide a sufficient oxygen concentration to ward off polymerization.

Therefore, in order to reduce the time until the oxygen and the liquid within the distillation column reach an equilibrium concentration, it is necessary to maintain the distillation column under reduced pressure so that large scale, costly equipment is necessary for maintaining the reduced pressure is required.

On the other hand, according to the present invention, since the dissolved oxygen concentration in the (meth)acrylic acid solution introduced into the distillation column is enhanced -- that is, oxygen is fed to the (meth)acrylic acid before it is fed into the distillation column -- it is possible to dissolve oxygen to the (meth)acrylic acid thereby making oxygen available to cause oxygen to directly act to prevent the polymerization of (meth)acrylic acid, thereby achieving a high polymerization inhibiting effect without the need for large scale equipment necessary for maintaining the reduced pressure.

The procedures initiated by applicants are insightful and have considerable technical merit; these procedures are not described or suggested or contemplated by either of the applied

references. Necessarily as neither reference contemplates the procedures of the present invention, there is no suggestion that the combined teachings of the references would be of any more significance. Thus, even combining the references it is still not reasonable to deny the patentability of claims 1, 2 and 4-9.

Reconsideration and favorable action are solicited. Should the examiner require further information, please contact the undersigned.

Respectfully submitted,

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